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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/929,037	08/15/2001	Toru Koizumi	03500.015698.	1876
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EXAMINER				
QUIETT, CARRAMAH J				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

09/929,037

Applicant(s)

KOIZUMI ET AL.

Examiner

Carramah J. Quiet

Art Unit

2622

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 February 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3 and 5-28 is/are pending in the application.
- 4a) Of the above claim(s) 9-16 and 21-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 3, 5-8, 17-20 and 25-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Inventor's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. The amendment(s), filed on 02/04/2008, have been entered and made of record. Claims 3 and 5-28 are pending, of which claims 9-16 and 21-24 are withdrawn from consideration. The Applicant has canceled claims 1, 2, and 4.

Response to Arguments

2. Applicant's arguments, see Remarks, filed 02/04/2008, with respect to the first paragraph of 35 U.S.C. 112 rejection have been fully considered and are persuasive. The rejection of claims 3 and 28 has been *withdrawn* due to the explanation in the Remarks.
3. Applicant's arguments filed 10/05/2007 have been fully considered but they are not persuasive.

For **Claims 25 and 28**, Applicant asserts that the Masuyama reference fails to disclose, "the transfer switch is capable of* transferring a part of the carrier in the photoelectric conversion unit based on the driving signal of the third level from the driving circuit". The Examiner respectfully disagrees. In col. 11, lines 52-61, Masuyama teaches that the transfer signal is logically high – the transfer gate is ON – and the reset transistor is OFF. Accordingly, the Examiner maintains the rejections to Claims 25 and 28 as well as Claim 3.

For **Claims 5-8 and 26**, the Applicant asserts that the Hamasaki patent in combination with the Suzuki patent does not disclose a reading system like the one as defined in Claims 5-8 and 26. In particular, the Applicant states that unlike the combination of Hamasaki and Suzuki, Claims 5-8 and 26 include a feature of reading the carrier in the photoelectric conversion by a

pulse waveform. The Examiner respectfully disagrees. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., reading the carrier in the photoelectric conversion by a pulse waveform) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Accordingly, the Examiner maintains the rejections to Claims 5-8 and 26.

For, Applicants assert that **Claims 17 and 27** cannot be deduced from the prior art or the cited documents. The Examiner respectfully disagrees. In a Non-Final Office Action for the present application mailed on 08/04/2004, the Examiner took Official Notice in regards to what the combination of prior art did not teach. However, in the Remarks filed on 11/06/2006, the Applicant failed to timely traverse the Official Notice (the old and well-known statement). Therefore, the MPEP requires the Examiner to consider that particular limitation as Admitted Prior Art. Please note that MPEP 2144.03(c) states that

“...If applicant does not traverse the examiner's assertion of official notice or applicant's traverse is not adequate, the examiner should clearly indicate in the next Office action that the common knowledge or well-known in the art statement is taken to be admitted prior art because applicant either failed to traverse the examiner's assertion of official notice or that the traverse was inadequate... [Emphasis Added]

In the following Office Action, which was a Final Office Action mailed 01/24/2008, the Examiner originally notified the Applicant of this chapter/section. Please see the rejection to Claim 17. Respectfully, the Examiner maintains the rejections to Claims 17 and 27.

Claim Rejections - 35 USC § 102

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
5. **Claims 3, 25 and 28** are rejected under 35 U.S.C. 102(e) as being anticipated by Masuyama (U.S. Pat. #6,674,471).

Note: Claim 28 will be discussed first.

For **claim 28**, Masuyama discloses an image pickup apparatus (figs. 1-2) comprising:
a photoelectric conversion unit (fig. 2, ref. 3; col. 5, lines 1-2);
a transfer switch (fig. 2, ref. 4) for transferring a carrier in the photoelectric conversion unit (col. 5, lines 1-25);

an amplifying unit (fig. 2, refs. 5/6a) for amplifying a signal based on the carrier and having an input unit (ref. 5) which inputs the carrier transferred by the transfer switch (col. 5, line 14-47);

a reset element (fig. 2, ref. 7) for resetting the input unit, wherein the reset unit resets the input unit when the reset unit is in an ON state (col. 5, line 48-58); and

a driving circuit (fig. 1, refs. 41/42) for driving the transfer switch (col. 5, line 59 – col. 6, line 3; col. 11, lines 22-67),

wherein the driving circuit supplies the transfer switch with a driving signal having a level which is changed between a first level for changing the transfer switch into an OFF state (col. 11, lines 22-32), a second level for changing the transfer switch into an ON state (col. 11, lines 51-59), a third level intermediate between the first and second levels (col. 11, lines 32-51), and the transfer switch is capable of^{*} transferring a part of the carrier in the photoelectric

conversion unit based on the driving signal of the third level from the driving circuit (col. 11, lines 52-61), and

wherein the driving signal of the third level is supplied to the transfer switch after termination a storage period of the carrier in the photoelectric conversion unit (col. 11, lines 32-51), during a period of a transition of the driving signal from the second level into the first level (col. 11, lines 37-50), and *while the reset element is an OFF state* (col. 11, lines 57-61). Also, please read col. 11, line 51 – col. 12, line 4) and see figs. 11 and 15.

For **claim 3**, Masuyama discloses the device wherein said photoelectric conversion unit includes an embedded photodiode (col. 5, lines 1-12).

Regarding **claim 25**, Masuyama teaches a drive method for an image pickup device including a plurality of pixels (fig. 1, ref. 1; col. 4, lines 54-67) each including a photoelectric conversion unit (col. 5, lines 1-2), a semiconductor area to which a signal from said photoelectric conversion unit is transferred (col. 5, lines 1-25), a transfer switch to transfer the signal from said photoelectric conversion unit to said semiconductor area (col. 5, lines 1-25), and a read unit (fig. 2, refs. 6a/b) to read out the signal from said semiconductor area (col. 5, line 26-47), comprising:

an output step of outputting a first drive signal level at which said transfer switch is set in an OFF state (col. 11, lines 22-32), a second drive signal level at which said transfer switch is set in an ON state (col. 11, lines 51-59), and a third drive signal level between the first level and the second level (col. 11, lines 33-50) and the transfer switch is capable of* transferring a part of the carrier in the photoelectric conversion unit based on the driving signal of the third level signal level (col. 11, lines 52-61),

wherein the third drive signal level is held for a part of a predetermined time while said transfer switch is changing from the ON state to the OFF state (col. 11, line 51 – col. 12, line 4). Also, please see the timing relationship for TRi in figs. 11 and 15.

Claim Rejections - 35 USC § 103

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
7. **Claims 5-8 and 26** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamasaki et al. (U.S. Patent #5,187,583) in view of Suzuki et al. (U.S. Patent #5,828,407).

For **claim 5**, Hamasaki discloses an image pickup device (fig. 1) comprising:

a plurality of pixels (ref. 5 – FDA) each including a photoelectric conversion unit (fig. 1, not numbered; (col. 3, lines 8-19), a semiconductor area (1 – ST) to which a signal from said photoelectric conversion unit is transferred (col. 3, lines 21-35), a transfer switch (2 – OG) to transfer the signal from said photoelectric conversion unit to said semiconductor area (col. 3, lines 21-35), and a read unit (ref. 4) to read out the signal from said semiconductor area (col. 3, lines 21-35); and

a drive circuit coupled to said pixels (ref. 8; col. 3, lines 20-39).

However, Hamasaki does not expressly disclose a drive circuit to output a signal for controlling said transfer switch so that a time during which said transfer switch changes from an ON state to an OFF state becomes longer than a time during which said transfer switch changes from the OFF state to the ON state.

In a similar field of endeavor, Suzuki discloses a transfer switch (fig. 1, refs. 10/11; col. 7, lines 7-14) and a drive circuit (fig. 1, refs. 2-4; col. 6, lines 58-65) to output a signal for controlling said transfer switch so that a time during which said transfer switch changes from an ON state to an OFF state becomes longer than a time during which said transfer switch changes from the OFF state to the ON state (col. 9, lines 15-63). Also in Suzuki, please see figs. 3-5. In light of the teaching of Suzuki, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the driving circuit of Hamasaki in order to improve the dynamic range of the image thereby realizing high charge transfer efficiency without causing blooming (Suzuki, col. 4, lines 49-56).

For **claim 6**, Hamasaki, as modified by Suzuki, discloses the device wherein said read unit includes an amplification transistor (fig. 2, ref. 4) for amplifying and outputting the signal in said semiconductor area (col. 3, line 8-19).

For **claim 7**, Hamasaki, as modified by Suzuki, Hamasaki teaches the embedded photodiode in a photoelectric conversion unit (fig. 1; col. 3, line 8-19).

For **claim 8**, Hamasaki, as modified by Suzuki, discloses the device (Suzuki, fig. 1) further comprising an analog/digital conversion circuit (ref. 6) *adapted to** convert a signal from each of said plurality of pixels into a digital signal (col. 7, lines 1-3), a signal processing circuit (ref. 7) *adapted to** process the signal from said analog/digital conversion circuit (col. 7, lines 1-5), and a recording circuit (ref. 9) *adapted to** record the signal processed by said signal processing circuit (col. 7, lines 1-7).

Regarding **claim 26**, this claim is a method claim corresponding to the apparatus claim 5. Therefore, claim 26 is analyzed and rejected as previously discussed with respect to claim 5.

8. **Claims 17-20 and 27** are rejected under 35 U.S.C. 103(a) as being unpatentable over Gowda et al. (U.S. Patent #6,344,877).

For **claim 17**, Gowda discloses an image pickup device (fig. 2) comprising:

a plurality of pixels (fig. 2, ref. 30; col. 4, lines 1-7) each including a photoelectric conversion unit (fig. 3, ref. 26), a semiconductor area to which a signal from said photoelectric conversion unit is transferred (col. 4, line 62 – col. 5, line 18), a transfer switch (fig. 3, ref. 22) to transfer the signal from said photoelectric conversion unit to said semiconductor area (col. 5, lines 19-59), and a read unit (fig. 3, ref. 23) to read out the signal from said semiconductor area (col. 5, line 50-59); and a drive circuit coupled to said pixels (fig. 2, ref. 14; col. 4, lines 27-62) to output a signal to control said transfer switch so that a fall speed V_{off} for changing said transfer switch from an ON state to an OFF state has a relation 1.2, 1.8, 2.5, 3.3, or 5 volts on the order of $2\mu\text{sec}$ (col. 7, lines 16-23 and col. 8, lines 29-40).

However, Gowda does not expressly teach that changing said transfer switch from an ON state to an OFF state has a relation $10\text{ V}/\mu\text{sec} > V_{\text{off}}$.

The Examiner takes Official Notice that it is well known in the art for a drive circuit to output a signal to control a transfer switch so that a fall speed V_{off} for changing the transfer switch from an ON state to an OFF state has a relation $10\text{ V}/\mu\text{sec} > V_{\text{off}}$. It is noted by the Examiner that because Applicant failed to timely traverse the old and well-known statement, it is now taken as Admitted Prior Art (see MPEP 2144.03(c)). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the driving circuit of Gowda in order to facilitate high-speed imaging.

For **claim 18**, Gowda discloses the device wherein said read unit includes an amplification transistor (fig. 3, ref. 23) for amplifying and outputting the signal in said semiconductor area (col. 5, lines 50-59).

For **claim 19**, Gowda discloses the device wherein said photoelectric conversion unit includes an embedded photodiode (fig. 3, ref. 26; col. 4, line 62 – col. 5, line 18).

For **claim 20**, Gowda discloses the device further comprising
an analog/digital conversion circuit (fig. 2, ref. 52) *adapted to** convert a signal from each of said plurality of pixels into a digital signal (col. 4, lines 12-15).

a signal processing circuit (fig. 2, ref. 44) *adapted to** process the signal from said analog/digital conversion circuit (col. 4, lines 59-61), and

a recording circuit (fig. 2, after ref. 44) *adapted to** record the signal processed by said signal processing circuit – inherently, because after ref. 44 (col. 4, lines 59-61), the image signals are transferred to processing/image storage electronics. Please see fig. 2.

Regarding **claim 27**, this claim is a method claim corresponding to the apparatus claim 17. Therefore, claim 27 is analyzed and rejected as previously discussed with respect to claim 17.

***Note:** The Applicant's "*capable of*" language and "*adapted to*" language as used in the claims broadens the scope of the claims. The MPEP states that, "Claim scope is not limited by claim language that suggests or makes optional but does not require steps to be performed, or by language that does not limit a claim to a particular structure." (MPEP 2111.04 [R-3]) In other words at the U.S. Patent and Trademark Office, if a limitation is written with "*capable of*"

language and/or “*adapted to*” language, a reference is deemed to meet that limitation if the reference discusses the same element that, although not actually performing the claimed function, is **structurally capable of** performing it. Accordingly, the Examiner *will not* give a limitation with “*capable of*” language and/or “*adapted to*” language patentable weight.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carramah J. Quiett whose telephone number is (571)272-7316. The examiner can normally be reached on 8:00-5:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, NgocYen Vu can be reached on (571) 272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Carramah J. Quiett/
Examiner, Art Unit 2622
April 24, 2008

*/Ngoc-Yen T. VU/
Supervisory Patent Examiner, Art Unit 2622*